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# ATTACHMENT TO EXAMINERS AMDT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT

Confirmation No. 3839

In re : Application of MACKAY and MOLINARO  
For : FORMING SOLDER BALLS ON SUBSTRATES  
Serial No. : 10/643,766  
Filed : Aug 18, 2003  
Group Art Unit : 1725  
Examiner : Johnson, Jonathan J.  
Our Docket No. : Spheretek M-6

3 PAGES  
TOTAL

July 13, 2005

**COMMISSIONER FOR PATENTS**  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This is in response to July 12, 2005 phone discussion concerning claims 9, 10, and 12.  
Enclosed is an amended set of claims conforming to the Examiner's suggestion in order to place  
the application in condition for allowance.

For the Applicant,

  
Dwight A. Stauffer date

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## CERTIFICATE OF TRANSMISSION BY FACSIMILE

I hereby certify that this correspondence is being transmitted to the Examiner in the United States Patent and Trademark Office (Fax No. 571-273-1177) on July 13, 2005.

Name of Person Signing Certificate

: Dwight A. Stauffer

Signature



Date of Person signing

: July 13, 2005

Docket Spheretek M-6

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**Amendments to the Claims:**

The below Listing of Claims replaces all prior versions and listings of claims in the application:

Cancel claims 9 and 10.

Amend the remaining claims, as indicated below. The previously presented text of the claims 9 and 10 is substantially copied into claim 12, from which they depended.

**Listing of Claims:**

1. (canceled)
2. (canceled)
3. (canceled)
4. (canceled)
5. (canceled)
6. (canceled)
7. (canceled)
8. (Previously Presented) Apparatus, according to claim 12, further comprising:  
an inlet tube extending from exterior the chuck base to within the cavity, underneath the diaphragm.
9. (canceled)
10. (canceled)
11. (Previously Presented) Apparatus, according to claim 12, wherein:  
the diaphragm comprises a sheet of silicon rubber material.
12. (Currently Amended) Apparatus for forming solder balls on substrates comprising a chuck assembly, said chuck assembly comprising:  
a rigid, generally planar chuck base having a cavity extending into the chuck base from a top surface thereof;  
a generally planar, flexible diaphragm extending across the cavity and secured to the chuck base;  
said cavity being sized and shaped to receive the diaphragm;  
further comprising:  
a generally planar, flexible manifold element;

a recess, coaxial with and larger than the cavity, extending into the chuck base from the top surface thereof, said recess being sized and shaped to receive the manifold element;

further comprising:

a permeable substrate disposed beneath the diaphragm, between the diaphragm and a bottom surface of the cavity;

wherein the permeable substrate comprises a powdered metal plate.

13. (original) Apparatus, according to claim 12, wherein the manifold element has a top surface and a bottom surface and comprises:

a plurality of grooves extending across the top surface of the manifold element;

an opening extending from the top surface of the manifold element through to the bottom surface of the manifold element , and

the opening is aligned with an inlet orifice in the chuck base.

14. (original) Apparatus, according to claim 13, wherein:

the plurality of grooves comprise two parallel sets of intersecting grooves.

15. (original) Apparatus, according to claim 12, wherein:

the manifold element extends across the recess, and is secured to a top surface of the diaphragm.

16. (original) Apparatus, according to claim 12, wherein:

the manifold element comprises a sheet of a film material.

17. (canceled)